



# Effluent disposal in sewered areas

Operational instruction 538\_06

Issued 19/12/08

**What's it about?** This instruction provides information on how we assess whether new developments should connect to a public sewer. Consequently, it shows how we respond to discharge consent applications and consultations on planning applications.

In deciding what is reasonable, we take into account cost, practicality and sustainability.

This instruction accompanies policy [769\\_06 on Effluent Disposal in Sewered areas](#).



Document  
details



Related  
documents

**Who does it  
apply to?**

This instruction supports staff working on relevant discharge consent applications. It is also for staff working on the planning process when responding to proposals involving non-mains sewerage.

It also helps us to provide consistent information to developers.



Feedback

**Contact for  
queries**

Will Tipper

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## Introduction

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### Contents

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## Background

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### General cases

We expect developments discharging domestic sewage to connect to the public foul sewer where it is reasonable to do so. We will not normally grant a discharge consent for a private sewage treatment system where it is reasonable to connect to the public foul sewer.

We also expect discharges of trade effluent to connect to the public foul sewer, where it is reasonable to do so, and subject to the sewerage undertaker granting a trade effluent consent or entering into a trade effluent agreement.

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## Definitions

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### Domestic sewage and trade effluent

The term 'domestic sewage' is not defined in the WIA 1991, nor is it elsewhere in legislation but *Thames Water v. Blue & White Launderettes* (1980) 1 *WLR* 700 (Law periodical) distinguished domestic sewage from trade effluent in relation to commercial premises on the basis that domestic sewage arose from:

'...the domestic activities of those who worked there as opposed to the effects of the business activities.'

Department of Transport and the Regions (DETR) Circular 3/99 / Welsh Office (WO) Circular 10/99 defines 'domestic' sewage as:

'the contents of lavatories, and water which has been used for cooking and washing'.

Similarly section 117(1) of the Water Industry Act 1991 (WIA 1991) defines 'domestic sewerage purposes' as:

'the removal from buildings of the contents of lavatories, water which has been used for cooking or washing and surface water but excludes water used for the business of a laundry or preparing food or drink for consumption other than on the premises.'

Section 141 of the WIA 1991 defines trade effluent widely but specifically excludes domestic sewage.

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### Factors affecting what is a sewered area

The extent of a 'sewered area' in each case depends on whether it is reasonable for a development to connect to the public sewer, taking into account the factors in [Private treatment systems in sewered areas](#) and [Connection to the sewer](#).

The topography of the area, the size of the development and any other factors that affect how easy it will be for that development to connect to the public sewer will all have a bearing on the extent of a sewered area.

### Determining what is a sewered area

We generally consider premises within 30 metres of an existing public sewer to be within a sewered area, as local authorities have the power under s21 of the Building Act 1984 to require the connection of premises that are within 30 metres of a public sewer when plans are submitted to them under Building Regulations requirements.

In general:

The more premises are proposed in a development and...	the more likely it is that...
the easier and cheaper it would be for that development to connect to a public sewer	we would consider it reasonable for that development to connect to a public sewer.

Take the initial decision as to whether to approach the development as being one within a sewered area on the basis of:

- information initially available on the characteristics of that development;
- the availability of a public sewer; and
- the physical characteristics of the area in which the development is taking place.

## Applicability to existing private developments

### Private sewerage systems

There remain some existing premises in sewered areas that are served by private sewerage systems. As these systems age, it will be necessary for the householder to replace the existing system and this may cause them to apply to us for a discharge consent.

### Determining applications for the replacement of existing private sewerage systems

When considering applications for the replacement of existing private sewerage systems, the same considerations are relevant as when deciding whether to grant a discharge consent to a new development.

This is because, when compared to connection to the public sewer, the additional environmental risks associated with using private sewage treatment systems in sewered areas still remain.

Consider the environmental risks against the same criteria when deciding whether they are acceptable in particular circumstances.

**The problems with the proliferation of private systems**

Where premises rely on private sewerage systems, these systems depend on proper operation and regular maintenance to function effectively. If this does not happen, the plants are prone to failure, causing pollution of land and/or watercourses, as well as potential nuisance and risk to human health.

Many householders lack the expertise to properly operate or maintain private sewerage systems. They are unaware of the impacts until the system fails or are unwilling to spend potentially significant sums of money on maintaining or replacing the plant when that is necessary.

Compliance rates for public and private sewage treatment works regulated by the Environment Agency show that, as a result of these difficulties, private sewage treatment works do not perform as well as public ones and are less likely to comply with their discharge consent. Our compliance figures for England and Wales, for the five-year period of 2000-2004, show that in each of those years between 94% and 96% of sewage treatment works operated by sewerage undertakers and regulated by a numeric discharge consent complied with the conditions of that discharge consent. By comparison, the compliance rate for privately operated sewage treatment works regulated by a numeric discharge consent ranged from 59% to 62%.

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**Multiple premises**

Furthermore, sewerage systems serving multiple premises will need to have appropriate legally binding agreements in place for their operation and maintenance. Where no such agreement is in place, or a dispute arises as to the responsibilities of individual householders, this frequently leads to the system not being properly operated or maintained. We deal with the failure of many hundreds of private sewerage systems (an average of just under 400 incidents per year between 2002 and 2007) and the consequent pollution, each year.

Connection to public sewer significantly reduces the risk of pollution from a householder's sewerage system. It also means that if there are problems with the public sewerage system serving those premises, funding is available through Ofwat and the AMP (Asset Management Plan) process to resolve those problems.

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## Connection to the sewer

### Contents

This chapter includes the following topics:

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## Legal drivers and hierarchy of connection

### Hierarchies of connection

Connection to a public sewer is the preferred option in all the hierarchies of connection listed in [Table 1](#). Developers need to demonstrate to us that they have fully explored all the ways their development might connect to a public foul sewer.

**Table 1**

This table shows the hierarchy of connection:

	Building Regulations	DETR March 1999 / WO Circular October 1999	Planning Policy Wales (March 2002)
1	Public sewer where reasonably practicable	Public sewer where feasible	Public sewer where feasible
2	Private sewer connecting to a public sewer	Package sewage treatment plant	Private system
3	Private sewage treatment plant (including septic tanks)	Septic tank	-
4	Cesspool	-	-

### Building Act 1984

Connection to a public sewer is the preferred option in all the hierarchies of connection listed in [Table 1](#). Developers need to demonstrate to us that they have fully explored all the ways their development might connect to a public foul sewer.

The Building Act 1984 enables a local authority to insist on a connection to a public foul sewer for a new building or extension on two conditions. These conditions are that:

- the development is within 100ft (30m) of an existing public sewer; and
- the developer is entitled to construct a drain through the land between the building and the sewer (Building Act 1984, section 21(4)).

**WIA 1991**

WIA 1991 outlines sewerage undertakers' duties to provide sewerage services in an area and the options available to developers for connection to the public sewer.

These are detailed in the following sections:

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**Section 94** Requires sewerage undertakers to provide, improve, extend, cleanse and maintain a system of public sewers so as to effectually drain an area.

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**Section 98** Enables developers to requisition a sewer from the sewerage undertaker, excluding single dwelling developments (applies to proposed developments and existing premises).

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**Section 102** Enables sewerage undertakers to adopt an existing sewer and enables the owners of private sewers to apply for those sewers to be adopted (excluding single dwelling developments).

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**Section 104** Provides for agreements between developers and sewerage undertakers to adopt sewers and sewage treatment works on completion (where more than one property is connected).

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**Section 106** Provides a right of connection to a sewer (applies **only** where the applicant's drains or sewer **already exists or where there is some certainty as to the mode of construction and likely condition of those drains and sewers**, for example where this is addressed through planning permission).

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**Proposals for non-mains drainage**

Before developers propose non-mains drainage in a publicly sewered area we require them to:

Step	Action
1	Formally approach the sewerage undertaker regarding a connection under section 98 or section 106 of the WIA 1991, as appropriate.
2	Serve notice for connection under section 98 or section 106 of the WIA 1991 if the sewerage undertaker has refused connection.
3	Provide details of the reasons given by the sewerage undertaker if it has refused connection under section 106 of the WIA 1991 and confirmation that they have appealed against this decision.  <b>OR:</b>  Provide details of the undertakings, security and payment required by the sewerage undertaker under section 98 of the WIA 1991. They must provide these together with confirmation that the applicant considers these to be reasonable and does not intend to appeal

	against them.
4	Demonstrate that it is not reasonable to connect to the public foul sewer.
5	Where it is not reasonable to connect to the public foul sewer, demonstrate that they have considered requesting that the sewerage undertaker adopt their proposed system.

**Lack of capacity**

Lack of capacity, or any plans to improve capacity, in the sewer is not a valid reason for a sewerage undertaker to refuse connection under section 106 of WIA 1991 (Ofwat appeal determination, *Post Office v. Yorkshire Water* (1997)). Where a sewerage undertaker refuses to allow connection under s106 on the grounds of lack of capacity the discharger may appeal to [Ofwat](#).

We may refuse to issue a discharge consent in such circumstances. In the appeal to National Assembly for Wales against refusal to grant a discharge consent, by Tony Morris & Sons (Development) Ltd in 2004, (Application No. BP0300401) the Assembly noted that:

‘the conclusion that the general presumption against consenting discharges from private sewage treatment works in areas served by a public sewer should apply, even in areas where the public sewer is overloaded, is justified’.

This position is also supported by similar Planning Inspectorate decisions on refusal of planning permission. (See Ref. APP/E6840/A/04/ 1161854, 19 January 05 and Ref. APP/L9503/A/04/1171401, 30 March 05.)

**Temporary private sewerage provision for new developments**

The presumption against relying on private sewerage systems in areas where it is reasonable to connect to the public sewer applies to temporary as well as permanent arrangements. Temporary provision of private sewerage to developments in such areas should not be seen as an alternative to proper [infrastructure planning](#).

As indicated above, [lack of capacity](#) in the receiving public sewer is not a valid reason for not connecting to an otherwise available public sewer. Our position on [allowing occupation before improvements](#) to public sewerage systems, in circumstances where there are plans to construct a public sewer to serve the site at a future date, is set out below. In deciding whether it is appropriate to grant any necessary discharge consent in such circumstances the Agency will expect the Applicant to demonstrate:

- That the timescale within which connection to the public sewer will take place is set and has been agreed in writing between the developer, the sewerage undertaker and the local authority.
- That there is a demonstrable need for that [specific](#) development to take place before it is practicable to provide the necessary public sewerage infrastructure.
- That the developer has entered into an enforceable agreement, either unilaterally or under s106 of the Town and Country Planning Act 1990, with the Local Planning Authority for the provision of any necessary public sewerage infrastructure or is obliged to connect the relevant premises to a public sewer within a specified period by a planning condition.

If these criteria are met we will consider whether the environmental risk associated with the proposed temporary private sewerage system is acceptable. We will consider, for example, the sensitivity of the receiving water environment in terms of its capacity and quality, the number of premises that would be served by the temporary system, how it would be maintained and the consequences of plant failure, and the expected duration of the discharge. The greater the risk posed by a proposed temporary system, the less likely it is to be acceptable.

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## Infrastructure planning

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### Matching to capacity

At a regional and area level, we will involve the sewerage undertaker, Local Planning Authority (LPA), regional assemblies, Welsh Assembly Government (WAG) and others to ensure that sewerage capacity is taken into account in:

- the regional spatial strategies;
- the Wales spatial plan; and
- LPA development plans

The Planning and Compulsory Purchase Act 2004 advocates this plan based approach.

Ideally we wish to see development matched to capacity or, where new capacity is required, put in place **before** a development occurs or is occupied. This approach is also supported by Planning Policy Statements 11 and 12 and Annex 'A' of 23 (Planning and Pollution Control) (Office of the Deputy Prime Minister 2004) and Planning Policy Wales (March 2002). Our report [Hidden Infrastructure](#) clearly explains the benefits of this approach.

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## Trade effluents

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### Criteria for domestic and trade sewerage

Our decisions on when to object to a development proposal, and when it is reasonable to connect to public sewer are made using the same criteria as for domestic sewerage.

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### Discharges of domestic sewage from commercial premises

Under section 98 or section 106 of the WIA 1991, commercial premises can require connection to be made for domestic sewerage purposes on the same basis as residential premises.

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### Discharge of trade effluent

However under section 118 of the WIA 1991, the discharge of trade effluent can only be made with the consent of the sewerage undertaker. Where the sewerage undertaker refuses to grant a consent under section 118, the developer must provide details of the reasons given by the sewerage undertaker for refusing to do so. They must also provide confirmation that they have appealed against this decision.

Where it is not reasonable to connect to the public foul sewer the developer must also demonstrate that they have considered requesting the sewerage undertaker to adopt their proposed system and that it would not be reasonable to do this.

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## Response to development proposals

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This section outlines our response to sewerage-related aspects of development proposals.

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## General approach

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### Objecting to private sewage disposal

We will oppose the use of private sewage disposal facilities within publicly sewered areas as environmentally unacceptable and object to such proposals at the planning stage, unless the applicant can demonstrate it is either impracticable or not cost-effective to connect to sewer. Accordingly, we may not consent a discharge to controlled waters from a proposed private sewage treatment facility in a sewered area.

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### Impact of approving private facilities

Planning approvals contrary to the above advice may establish an undesirable precedent with implications for developments across England and Wales and would inevitably relieve the sewerage undertaker of its statutory duty to improve and extend the provision of public sewers.

Connection to sewer offers the most environmentally, economically and socially appropriate long-term solution. We frequently encounter groups of households that are served by poorly maintained and/or operated private sewage treatment works that impact on the water environment. These issues are difficult to solve because of the collective ownership of these works and the owners' lack of expertise.

The provision of private facilities absorbs capital investment. This investment could otherwise be addressed to the necessary improvements of the public sewerage infrastructure. It also reduces the pressure on the sewerage undertaker to provide for developments.

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## No objection

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We will not object to a development proposal:

- involving 'change of use' if it will produce no net increase in the discharge load (see **Note**) to the sewerage catchment as a whole;
- for which the additional discharge load can be accommodated within existing discharge consent conditions;

**Note:** Discharge load is the product of flow and concentration.

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## Objections

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### Grounds for objection

We will object when a development proposal:

- includes non-mains drainage (such as a private sewage treatment system) in a location where it is reasonable to connect to the public foul sewer. See [Defining 'reasonable'](#) below for advice on whether it is reasonable;
  - includes mains drainage that will increase the discharge loading from the receiving Sewage Treatment Works (STW) and the STW is currently contravening its discharge consent;
  - will cause a significant increase in local flood risk;
  - includes mains drainage that will increase the discharge loading from the STW and the present discharge already causes, or the altered discharge is likely to cause, failure of:
    - a statutory objective (for example an EU Directive as currently implemented by Defra/WAG);
    - a non statutory objective (such as a River Ecosystem derived River Quality Objective (RQO) or relevant non-statutory saline quality standards);
  - includes mains drainage that would cause or exacerbate one or more of the following problems from a combined sewer overflow:
    - significant visual or aesthetic impact due to solids or fungus and a history of justified public complaint;
    - significant contribution to a deterioration in river chemical or biological class;
    - significant contribution to a failure to comply with Bathing Waters Directive quality standards for identified bathing waters;
    - significant contribution to a failure to comply with Shellfish Waters Directive mandatory standards;
    - operates in dry weather conditions;
    - operates in breach of consent conditions provided that they are still appropriate;
    - causes a breach of statutory and non statutory water quality standards.
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**Inadequate public infrastructure**

Give particularly careful consideration where a development proposal involves a connection to sewerage and/or sewage treatment infrastructure where we have concerns regarding its condition or capacity (see the bulleted list in the [Grounds for objection](#) section above). In these cases, one of the following scenarios below will apply:

- [our approach where improvements are planned](#);
- [our approach where no improvements are planned](#).

**Our approach where improvements are planned**

We will not object, or will withdraw any objection we have previously made, if there is a formal commitment in the current water company capital investment programme to complete the necessary improvement (see **Note**) to the infrastructure before the first occupation of the proposed development.

**Note:** This includes the necessary design capacity for valid planning permissions not yet put in place. We would also expect the water company to take account of Local Planning Authority (LPA) development plans.

We will request that the LPA impose a condition in the planning permission prohibiting occupation until the agreed improvement programme has been completed.

**Allowing occupation before improvements**

If an LPA is still minded to allow a development to be occupied **before** the necessary improvements to the sewerage infrastructure and sewage treatment facilities are completed, we will advise them to impose a planning condition or obligation requiring the developer to:

- provide alternative and adequate means of treatment, disposal and maintenance for the duration of the delay; and
- connect to the sewerage system on completion of the improvement scheme.

If a planning obligation is used it can take the form of an agreement, or a unilateral undertaking under section 106 of the Town and Country Planning Act 1990.

The applicant must...	We will require...
demonstrate as part of their application for planning permission that these temporary measures will not give rise to any of the problems identified in the paragraph 6 of Circular 3/99 / 10/99 such as 'damage to controlled waters'.	formal consent for private package treatment plants' discharges to controlled waters.
submit a drainage impact assessment that demonstrates that connection to the public sewer can be achieved in the future, and that the installation of any temporary system will not compromise this.	that the applicant submits detailed plans, including existing and proposed ground/sewer levels, as part of the planning application.  that the necessary sewer connection be provided at the time of construction. This requirement should also form part of the section 106 obligation.

**Our approach where no improvements are planned**

We will object and provide evidence at appeal and within our consultation response as necessary, if the sewerage undertaker objects to a proposed development on the basis of inadequacies within the foul drainage system and we have evidence to demonstrate that sewerage or sewage treatment facilities are causing significant environmental problems.

We will not object to a proposed development, if the sewerage undertaker has objected on the basis of inadequacies within the foul drainage system but we have no evidence available to support that view. In these circumstances we will recommend that the LPA asks the sewerage undertaker to provide details of the reasons for their objection.

If the sewerage undertaker has not objected to a proposed development but we have evidence that increased flows to a sewerage system will lead to adverse environmental impact we will object and provide evidence within our consultation response and at appeal as necessary.

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## Developments outside sewered areas

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For development **outside** publicly sewered areas proposing non-mains drainage (such as cesspools, septic tanks, package plants), these facilities must meet the requirements of paragraph 6 of Circular 3/99 / 10/99. We will require formal consent for private package treatment plant discharges to controlled waters.

We would object if:

- no foul drainage assessment was submitted for a high risk proposal;
  - a cesspool was proposed with no justification (for further information on cesspools, see [177\\_06 Use of cesspools](#)).
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## Evidence to support objections

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If we object to a development proposal on the grounds of actual or potential environmental harm caused by a sewage discharge we will:

- provide the LPA with a professional summary of our reasons for objecting, including evidence where available (such as evidence of the harm caused by an existing discharge), to support our formal objection;
  - either provide detailed evidence **or** make an expert witness available at any subsequent planning appeal where our objection has been used as a reason for refusal. The type of involvement will depend on the nature of the planning appeal –formal Public Inquiry, Informal Hearing or Written Representations appeal.
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## Defining 'reasonable'

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## Summary

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### Overview

Connection must be made to a public sewer where it is reasonable to do so. In deciding what is reasonable we will take into account cost, practicality and sustainability.

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## Cost

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### Cost factors

The cost of a connection to the public foul sewer depends on several factors such as the:

- number of premises;
  - distance to the sewer;
  - gradient to the sewer (whether the system is pumped or under gravity);
  - land a sewer may have to cross (such as river/rail crossings, ancient monuments/historic sites).
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### Benefits

A premium to connect to the public sewer above the costs of installing a private system is reasonable, because of the resulting benefits to the developer, the householder and the environment. These include increased property value, no ongoing maintenance of the sewerage system and less risk of pollution of the environment.

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**Examples of relevant appeal decisions**

This principle has been upheld by the Planning Inspectorate in two appeals:

- **Back Lane, Aine** (Planning Inspectorate reference T/APP/WQ/99/535/P5) where a refusal was based solely on the principle that sewage must go to public sewers wherever reasonable (£4,000 per property premium at 1999 prices);
- **Higher Thorne Farm, Ottery St. Mary** (Planning Inspectorate reference T/APP/WQ/05/1908) where there were also possible environmental effects from the proposed treatment plant (£8,000 per property premium at 2005 prices)

and by the National Assembly for Wales and Planning Inspectorate Wales in several appeals:

- St Davids Road, Letterston (Planning Inspectorate reference APP/N6845/X/03/514418 and associated Welsh Assembly Government decision A-EE912-12-041)
- Well Lane, Devauden, Monmouthshire (Planning Inspectorate Wales reference APP/E6840/A/04/1161854)
- Coedmoor Field, Dinas Cross, Pembrokeshire (Planning Inspectorate Wales reference APP/L9503/A/04/1171401)

However, the Planning Inspectorate considered that connection to the public sewer of a single, existing, premises at an additional cost of at least £20,000 was not appropriate.

- **Ryefield, Crockham Hill** (Planning Inspectorate reference APP/WQ/06/2600) where a package treatment plant was proposed to replace an existing septic tank and the Inspector considered that there was no specific evidence that the discharge would have any adverse effect on the environment, or give rise to nuisance. The additional cost of connection to the public sewer, estimated by the Inspector at approximately £20,000, was not justified

**Application of principles from appeal decisions**

The appropriate premium per premises will therefore vary depending on the development under consideration but the following summary reflects the outcomes of some of the appeals above:

If the cost of connection to sewer is greater than...	then a private sewage disposal system...
(number of premises x £4000-£8000) + cost of private treatment system,	is likely to be acceptable from a <b>cost</b> viewpoint.

In other words, depending on the scale of the development, some additional cost is justified in all cases. This premium could be higher or lower depending upon the characteristics of the development, inflation and quality of the environment.

### Justification of higher cost

A higher cost is justified if the:

- development is relatively large or includes businesses;
  - private plant may set a precedent for future planned development in the area;
  - or the private plant may cause or significantly contribute to environmental pollution.
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### Other costs

When considering the comparative costs of connection to public sewer and private sewerage provision we will also take into account the operational and maintenance costs arising from any private sewerage system as compared to likely sewerage charges. When comparing these operational and maintenance costs we will do so on the basis of cost per year in order to establish any difference. The likely cost of periodically replacing private systems is also relevant but is only likely to influence the overall comparison where the costs for public and private systems are otherwise similar. We would generally expect that the tanks themselves would need to be replaced, on average, about thirty years after being installed. The mechanical and electrical components of pumped systems would need to be replaced about every fifteen years, on average, if the components used are of an equivalent standard to those used in public sewerage systems. Where an all inclusive maintenance contract is in place, the cost of this would usually cover the replacement of mechanical and electrical components.

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### Benchmark costs

We expect the applicant to provide costs for both connection to the public sewer and provision of private sewerage. Benchmark costs are provided in the [Cost Tables](#) below against which the cost of a private sewerage option can be compared.

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## Practicality

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### Public sewers

The practicality of a connection to the public foul sewer depends largely on any physical, legal and technical barriers to connection, for example:

- the volume is too small to pump over the required distance without septicity problems arising;
  - the sewer would need to pass under a motorway, railway, river, ancient monument or similar, and this increases the costs, making them unreasonable;
  - the ground conditions are unsuitable for the laying of a sewer, for example due to bedrock, and this increases the costs, making them unreasonable;
  - the applicant/developer has no legal right to cross land between the development and the connection point to the mains sewer (requisitioning a drain or sewer under [s98 WIA 1991](#) may overcome this).
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**Non-mains solutions**

Give consideration to the practicality of non-mains solutions, for example, whether:

- suitable land is available for a soakaway;
  - sufficient space is available;
  - the proposed discharge location is suitable, for example it may be to a blind ditch or within a source protection zone;
  - effluent could pool or cause septicity problems.
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**Assessing practicability**

Assessing the factors described in annex A of Circular 3/99 / 10/99 will help you to make a decision on practicability.

A case by case decision will need to be made on practicability, based on the information supplied by the applicant for the consent to discharge/planning application.

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## Environmental considerations

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### Reasons for considering private treatment

In some cases the private treatment of effluent may be proposed on the grounds that it is environmentally preferable. In principle, we want to support this where appropriate. For example the effluent may be treated on site:

- for re-use in a grey-water system;
- to support re-charge of an aquifer or to augment flows in a watercourse; or
- to a significantly higher standard than would be achieved by discharging via the public sewer.

Any proposal of this sort will be considered on its merits.

Where any such proposal involves a discharge to a watercourse or groundwater, the applicant must demonstrate why this would be environmentally preferable in comparison to connection to the public sewer. Refer any such justification you receive to the surface water quality National Process and Technical Services (NPTS) team to support the development of this guidance.

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### Judging environmental credentials

Although the risks associated with proliferation remain, we will still grant a consent if the environmental credentials of a scheme justify it. In judging this you need to take into account things like:

- the comparative standards of the proposed private treatment plant and the sewage treatment works that effluent would be discharged to via the public sewer;
- the provision that the developer has made for maintenance of the system; and
- the sensitivity of the receiving water in the case of failure.

In general a proposal to discharge to a private plant which would reliably achieve significantly higher environmental standards than discharging to public sewer would be feasible in principle if the characteristics of the discharge are such that we would actively monitor it and maintain a level of control over it equivalent to a public sewerage discharge.

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**Deciding if the environmental benefits of a proposed scheme are achievable**

In concluding whether higher environmental standards are achievable we must consider both:

- the achievability of those standards by the plant in question, taking into account our knowledge of the performance achieved by similar plants in other locations; and
- the need for proper operation and maintenance in order to ensure that those standards continue to be met in the future.

We expect a proposal for a private system in a sewered area to use proven technology and for the developer to take out an appropriate maintenance contract for the plant.

Bear in mind that a large commercial operator is more likely to have the necessary legal framework and technical expertise available to ensure that the plant does not malfunction or cause pollution. A private system receiving effluent from a single large commercial premises is consequently more likely to be acceptable than a system serving residential premises.

In order to embed the proper maintenance of the plant we will also ask LPAs to include conditions on any planning consent, requiring the developer to put maintenance provision in place before the plant is commissioned.

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## Supporting information

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### Contents

This chapter includes the following topics:

Topic	See page
<a href="#">Cost tables</a>	<a href="#">21</a>
<a href="#">Worked example</a>	<a href="#">27</a>
<a href="#">Group roles</a>	<a href="#">29</a>

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### Standards

The [Protocol on Design, Construction and Adoption of Sewers in England and Wales](#), Defra (April 2002) states that all new sewers should be built to adoptable standards. There ought to be no difference in price between public and private systems.

Assessing reasonableness will usually be based on the applicant's costs for the particular site. However, the indicative costs in the tables below may be used as a guide if costs are not supplied, or where it appears that an applicant may be underestimating costs.

The following tables contain indicative costs taken from section 101A, Standard costs for private sewage treatment systems (WRc Report No: EA 6911, July 2005). The indicative costs provided below are at 2005 prices.

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## Costing private sewerage options

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### Key

This section lays out the costs relating to sewerage in the form of tables. This first table shows a key to the different types of package plant used in the following tables:

Type	Description
ASP	Activated Sludge Plant
BF	Biological Filter (also known as percolating or trickling filter)
RBC	Rotating Biological Contactor
SAF	Submerged Aerated Filter
SBR	Sequencing Batch Reactor

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Package plant  
unit costs

Cost (£)					
Population Equivalent (PE)					
Type of package plant	1 to 3	5 to 12		10 to 20	
		1 to 6	5 to 12	10 to 15	14 to 20
SBR	2240	4877	5977	8218 (PE 18)	
ASP	-	2383	3124	3585	4077
RBC <sup>(1)</sup>	2523 (PE 1 to 4) (3272)		5000	7350	
SAF (including integral pumpset)	-	2752 (3502)	2950 to 3948 (4692)	3850 to 4685 (5418)	
BF <sup>(2)</sup>	-	2500		3250 (PE 14)	5000

Package plant  
installation  
costs

Type	Typical cost for PE 1 to 6 (£)	Typical cost for PE 10 to 20 (£)
ASP	2500 to 4000	-
BF	1500 to 2000 (additional cost for discharge pipework and drainage field)	-
RBC	2000 to 3000	6000
SAF	2000 to 3000	-

Package plant  
commissioning  
costs

Type	Typical cost for PE 1 to 12 (£)	Typical cost for PE 10 to 20 (£)
ASP	105	210
BF	No commissioning required	
RBC	-	250
SAF	150	300
SBR	Included in unit price along with delivery costs	

**Power consumption costs**

Type	Population Equivalent	Annual power consumption cost (£)
SBR	Up to 2.5	22
	Up to 10	33
	Up to 20	339
ASP	Up to 2.5	40
	Up to 10	54 to 65
	Up to 20	72 to 120
RBC	Up to 2.5	-
	Up to 10	27
	Up to 20	
SAF	Up to 2.5	22 to 47
	Up to 10	29 to 47
	Up to 20	55
BF	Up to 2.5	
	Up to 10	
	Up to 20	

**Maintenance/service contract costs**

Type	PE	Maintenance/service contract cost (Basic level)	Maintenance/service contract cost (High level)
SBR	Up to 2.5	-	
	Up to 10		105
	Up to 20		210
ASP	Up to 2.5	100-200	
	Up to 10	-	
	Up to 20		
RBC	Up to 2.5		
	Up to 10		
	Up to 20	270	380
SAF	Up to 2.5	129	223
	Up to 10	129	263
	Up to 20	193	562
BF	Up to 2.5	-	
	Up to 10		
	Up to 20		

General	Up to 2.5	129	223
	Up to 10	161	264
	Up to 20	193	303

**Sampling chamber**

Type	Cost (£)
Septic tank	95 to 105
Package plant (SBR)	95 to 105
Package plant (SAF)	240
Package plant (RBC)	275
Package plant (ASP)	120 (off the shelf unit) (70 – 80 if constructed)

## Sludge disposal

Type of treatment system	Population Equivalent	Number of sludge tanker visits/year	Average sludge tanker cost per visit	Annual sludge disposal cost
Septic tank	Up to 2.5 (2800 litres)	1	93	93
	Up to 10 (3800 litres)		105	105
	Up to 20 (6000 litres)		129	129
Package plant (SBR)	Up to 2.5	1	87	87
	Up to 10		99	99
	Up to 20		129	129
Package plant (ASP)	Up to 2.5	<1 (partial desludging every 3 to 5 years)	100*	20 to 35 (assumes desludging cost of £ 100 every 3 to 5 years)
	Up to 10			
	Up to 20			
Package plant (RBC)	Up to 2.5	-	-	-
	Up to 10	-	-	-
	Up to 20	2 to 3 (4 m <sup>3</sup> sludge removed every 5 months)	98	195 to 293
Package plant (SAF)	Up to 2.5	1 to 2	100 to 200*	100 to 200*
	Up to 10			
	Up to 20			
Package plant (BF)	Up to 2.5	1	93	93
	Up to 10		107	107
	Up to 20		107	107

**Note:** (\*) Tankering companies generally have a minimum load and therefore minimum charge. This is typically in the region of £100. The desludging volume for these plants is less than the typical minimum load and therefore the minimum charge will apply each visit.

**Drain/private sewer**

Description	Cost (£)
100/150 mm pipe, not exceeding 2 m in depth, in a garden or field	£25 to £35 per metre
Extra over cost for laying in locations with no access for a small mechanical excavator	£20 to £30 per metre

**Manholes**

Description	Cost (£)
1050 mm internal diameter manhole, not exceeding 2 m in depth, in garden/field	£700 to £900 per manhole
600 mm internal diameter inspection chamber, not exceeding 1.5 m in depth, in garden/field	£200 to £300 per manhole

**Pumping stations**

The costs of pumping stations are fairly site specific, as the cost varies depending upon the type and size of pump required. A small purpose built pumping station built to normal civil/mechanical/electrical engineering specifications will cost, as a minimum, £ 30,000. However, most package plant suppliers can supply either:

- pumps as an integral part of the treatment unit;

**Note:** These integral pumps can be purchased from the manufacturer/supplier of the package plant for an additional cost, typically in the region of £500 to £750;

- or a pre formed package pumping station.

**Note:** The cost of these units is typically £1,000 to £2,000.

**Site access**

- the need for a specially constructed access road is highly site dependent;
- this is unlikely to be necessary for individual treatment/storage facilities;
- site access for schemes serving two or three dwellings is not likely to be a major cost;
- site access may however be required for larger schemes involving, say, 10 or more dwellings. The cost depends upon the length of access road and construction standard. A cost of £ 20,000 would not seem unreasonable, though in some circumstances it could be considerably more.

## Worked example

### Worked example

Below is a worked example of a package plant serving four dwellings (for PE 5 to 12):

Preliminary items			
Item	Description	Cost	Notes
1	General Planning and Legal Issues		
2	Site Investigation		
3	Archaeological		
4	Acquisition of Land Issues		
5	Access Related Issues		
	<b>Total preliminary items</b>	2750	(between 1000 and 1500 for the first per property, plus £ 500 for each property, assumed 4 properties)

Capital cost items			
Item	Description	Cost	Notes
1	Unit	4463	(between 2950 and 5977, assumed average)
2	Transportation and Installation	4000	(assumes average)
3	Commissioning	128	(between 105 and 150, assumed average)
4	Drains and Private Sewers	10000	(£ 100/metre for 20-30m drain/property, assumed 25m drain/property, assumed 4 properties)
5	Pumping Stations	0	
6	Drainage Field	0	
7	Outfall	3000	(£ 100/metre for 30m pipework)
8	Sampling Point	175	(between 75 and 275, assumed average)
9	Site Access	5000	(assumed nominal value of £ 5000 for additional land)
	<b>Total capital cost</b>	26,766	

Annual operating cost items			
Item	Description	Cost	Notes
1	Power	47	(between 29 and 65, assumed average)
2	Maintenance and Replacement	264	(assumed highest level of service contract. Costs between 263 and 264)
3	Effluent Removal	0	
4	Sludge Removal	115	(between 29 and 200, assumed average)
5	Drainage Field	0	
6	Outfall	0	
	<b>Total annual operating expenditure</b>	426	

**Notes on worked example**

It is anticipated that the major capital items will need to be replaced as follows:

Description	Replace item...
Package plant unit	every 30 years (Capital Items 1, 2 and 3)
Associated drains and sewers, and outfall pipe	every 60 years (Capital Items 4 and 7)
Mechanical and electrical items in package plant unit	as required, cost covered in 'all inclusive' maintenance contract.

## Group roles

### Role descriptions

The roles of the people that we work with in the process, from our viewpoint, are outlined below:

Group	Role
Environment Agency	<p>Statutory consultee in development planning process. Makes comments from the perspective of environmental legislation and policy on suitability/sustainability of development proposals.</p> <p>Regulation of discharges of sewage to controlled waters using discharge consents (Water Resources Act 1991, Environment Act 1995).</p>
Water Industry/ Sewerage Undertaker	<p>Provide, improve, extend, cleanse and maintain a system of public sewers to effectually drain their area.</p> <p>Respond to applications for connections and sewer requisition.</p> <p>Non statutory consultee in the development planning process. Makes comments on suitability of development proposal from sewerage provision viewpoint.</p>
Water Services Regulation Authority/ Ofwat	<p>Water industry regulator responsible, along with Secretary of State, for ensuring the Water Industry Act Section 94 is complied with.</p>
Local Planning Authority	<p>To take decisions in accordance with legislation and Ministerial guidance.</p> <p>To ensure developers provide sufficient information to allow proper consideration of a proposal and to ensure the development conforms to the principles of sustainable development.</p>
Developer	<p>Ensure they fully understand and explore their options for sewage disposal.</p> <p>Design and build their sewerage systems to a standard that complies with Building Regulations (Part H Building Regulations 2000) and is adoptable by the water companies (Sewers for Adoption, 6<sup>th</sup> edition).</p>

## Related documents

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### Links

- [177\\_06 Use of cesspools](#)
  - [769\\_06 Policy on Effluent Disposal in Sewered areas](#)
  - [Operation Instruction on Determining an application for a Category 1 or 2 water quality discharge to inland or tidal waters](#)
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### References

- The Building Act 1984
  - The Building Regulations 2000 (SI2000/2531 as amended by SI2001/3335)
  - Department of the Environment, Transport and the Regions Circular 3/99 / Welsh Office Circular 10/99 'Planning requirements in respect of the Use of Non-Mains Sewerage incorporating Septic Tanks in New Development'.
  - Planning Policy Wales, March 2002, Welsh Assembly Government
  - Water Industry Act 1991
  - Planning and Compulsory Purchase Act 2004
  - Planning Policy Statements 11 (Regional Spatial Strategies, Sept 2004), 12 (Local Development Frameworks, Sept 2004) and 23 (Planning and Pollution Control) (Nov 2004), Office of the Deputy Prime Minister
  - Town and Country Planning Act 1990
  - The Protocol on Design, Construction and Adoption of Sewers in England and Wales, Defra (April 2002)
  - Section 101A - Standard costs for private sewage treatment systems, WRc Report No: EA 6911 (July 2005)
  - Urban Waste Water Treatment Directive 1991 / Urban Waste Water Treatment (England and Wales) Regulations 1994
  - Sewers for Adoption, 6<sup>th</sup> edition, WRc, 2006.
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